AUDIO TECHNOLOGY II

COURSE DESCRIPTION

Audio Technology II is designed to give students the advanced knowledge and technical skills needed to prepare them for post-secondary study or entry level employment in the audio industry. Students will develop skills in which to conduct complete recording sessions as well as building skills in mix-down, mastering, and other post production techniques. In all situations, students will present themselves with integrity and professional behavior.

It is strongly recommended that administration and guidance follow the scope and sequence and course recommendations as listed.

Recommended: Audio Technology I

Recommended Credits: 1 or 2

Grade Levels: $10^{th} – 12^{th}$

Number of Competencies in Course: 43

AUDIO TECHNOLOGY II

STANDARDS

1.0 Students will demonstrate Audio Technology safety practices, including Occupational Safety and Health Administration (OSHA) and Environmental Protection Agency (EPA) requirements for an audio recording facility.

2.0 Students will demonstrate leadership, citizenship, and teamwork skills required for success in the school, community, and workplace.

3.0 Develop advanced skills using MIDI (musical instrument digital interface) and music creation software.

4.0 Students will show knowledge of advanced console functions in recording and live applications.

5.0 Students will use various microphones and advanced techniques to produce desired sounds.

6.0 Students will demonstrate use and advantages of special effects equipment.

7.0 Students will properly use basic tools and test equipment.

8.0 Students will demonstrate ability to mix-down and master audio recordings.

9.0 Students will complete a final production portfolio.

10.0 Students will evaluate recorded and live audio for content, style, and quality.

AUDIO TECHNOLOGY II

STANDARD 1.0

Students will practice all aspects of safety procedures.

LEARNING EXPECTATIONS

The student will:

1.1 Follow OSHA and EPA regulations and manufacturer specifications affecting audio systems technology.
1.2 Respond to safety communications referring to audio systems.
1.3 Pass a written safety examination with 100% accuracy.
1.4 Pass a performance examination on equipment with 100% accuracy.
1.5 Maintain a portfolio record of written safety examinations and equipment examinations for which the student has passed an operational checkout by the instructor.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student must:

1.1 Identify OSHA and EPA regulations and manufacturer specifications affecting audio systems technology.
1.2 Respond to safety communications referring to audio systems.
1.3 Pass a written safety examination with 100% accuracy.
1.4 Pass a performance examination on equipment with 100% accuracy.
1.5 Maintain a portfolio record of written safety examinations and equipment examinations for which the student has passed an operational checkout by the instructor.

SAMPLE PERFORMANCE TASK

- Conduct safety inspection of the studio and remote sites.
- Inspect and report on potential problems.
- Demonstrate safe procedures in using equipment.
- Pass written safety test with 100% accuracy.

INTEGRATION LINKAGES

Mathematics, Technical Math, Physics, Science, Technology Literacy, English IV: Communications for Life, Problem-Solving, SkillsUSA, National Science Foundation, Computer Skills, Internet Navigation Skills, Presentation Skills, Critical Thinking and Problem Solving, Technical Writing Skills, Secretary's Commission on Achieving Necessary Skills (SCANS), Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environmental Protection Agency (EPA

AUDIO TECHNOLOGY II

STANDARD 2.0

Students will demonstrate leadership, citizenship, and teamwork skills required for success in the school, community, and workplace.

LEARNING EXPECTATIONS

The student will:

2.1 Exhibit positive leadership skills.
2.2 Participate in SkillsUSA as an integral part of classroom instruction.
2.3 Assess situations and apply problem-solving and decision-making skills to client relations in the community and workplace.
2.4 Demonstrate the ability to work cooperatively with others in a professional setting.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student:

2.1 Demonstrates character, leadership, and integrity using creative and critical-thinking skills.
2.2.A Applies the points of the creed to personal and professional situations.
2.2.B Participates and conducts meetings and other business according to accepted rules of parliamentary procedure.
2.3 Analyzes situations in the workplace and uses problem-solving techniques to solve the problem.
2.4.A Participates in a community service project.
2.4.B Assists with an officer campaign with Tennessee SkillsUSA.

SAMPLE PERFORMANCE TASK

- Create a leadership inventory and use it to conduct a personal assessment.
- Participate in various SkillsUSA programs and/or competitive events.
- Evaluate an activity within the school, community, and/or workplace and project effects of the project.
- Implement an annual program of work.
- Prepare a meeting agenda for a SkillsUSA monthly meeting.
- Attend a professional organization meeting.
- Participate in the American Spirit Award competition with SkillsUSA.

INTEGRATION LINKAGES

SkillsUSA, *Professional Development Program,* SkillsUSA, Communications and Writing Skills, Teambuilding Skills, Research, Language Arts, Sociology, Psychology, Math, Technical Math, English IV: Communications for Life, Social Studies, Problem Solving, Interpersonal Skills, Employability Skills, Critical-Thinking Skills, SCANS (Secretary's Commission on Achieving Necessary Skills), Chamber of Commerce, Colleges, Universities, Technology Centers, and Employment Agencies

AUDIO TECHNOLOGY II

STANDARD 3.0

Students will develop advanced skills using MIDI (musical instrument digital interface) and music creation software.

LEARNING EXPECTATIONS

The student will:
3.1 Demonstrate understanding of MIDI signal flow.
3.2 Create an audio file using multiple styles.
3.3 Demonstrate understanding of music notation.
3.4 Demonstrate understanding of computer based audio applications and compatibility issues.
3.5 Demonstrate understanding of audio synchronization systems.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student must:
3.1 Define and create a chart showing MIDI signal flow.
3.2 Build various audio files using multiple musical styles.
3.3 List and name all the parts and notes of a musical chart.
3.4 Describe various computer based audio applications and how compatibility issues can develop.
3.5 Synchronize various audio systems without causing compatibility issues.

SAMPLE PERFORMANCE TASK

- Create MIDI sequence for evaluation.
- Identify all parts of notation on sample of sheet music.

INTEGRATION LINKAGES

Mathematics, Technical Math, Physics, Science, Technology Literacy, English IV: Communications for Life, Problem-Solving, SkillsUSA, National Science Foundation, Computer Skills, Internet Navigation Skills, Presentation Skills, Critical Thinking and Problem Solving, Technical Writing Skills, Secretary's Commission on Achieving Necessary Skills (SCANS), Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environmental Protection Agency (EPA), www.howstuffworks.com

AUDIO TECHNOLOGY II

STANDARD 4.0

Students will show knowledge of advanced console functions in recording and live applications.

LEARNING EXPECTATIONS

The student will:
4.1 Identify all parts of a modern mixing console.
4.2 Demonstrate understanding of multiple bus signal flow technology.
4.3 Demonstrate ability to control multiple input lines effectively in a live situation.
4.4 Demonstrate ability to control pre-amp gain to provide for best signal-to-noise ratio.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student must:
4.1 List all parts of a modern mixing console.
4.2 Set up and chart multiple bus signal flow.
4.3 Connect multiple input lines effectively in a live situation.
4.4 Identify and select pre-amp gain to provide for best signal-to-noise ratio.

SAMPLE PERFORMANCE TASK

- Set up a recording session.
- Describe all parts of mixing console.
- Maintain optimum signal for proper recording levels.

INTEGRATION LINKAGES

Mathematics, Technical Math, Physics, Science, Technology Literacy, English IV: Communications for Life, Problem-Solving, SkillsUSA, National Science Foundation, Computer Skills, Internet Navigation Skills, Presentation Skills, Critical Thinking and Problem Solving, Technical Writing Skills, Secretary's Commission on Achieving Necessary Skills (SCANS), Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environmental Protection Agency (EPA), www.howstuffworks.com

AUDIO TECHNOLOGY II

STANDARD 5.0

Students will use various microphones and advanced techniques to produce desired sounds.

LEARNING EXPECTATIONS

The student will:

5.1 Identify the different patterns of condenser and diaphragm microphones.
5.2 Identify the different frequencies of condenser and diaphragm microphones.
5.3 Demonstrate knowledge of which microphones are best suited for various instruments or situations.
5.4 Identify direct sound and ambient sound and show ability to use technique to record each.
5.5 Analyze usage of isolation rooms, their advantages and disadvantages.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student must:

5.1 Create a chart showing the different patterns of condenser and diaphragm microphones.
5.2 Create a chart showing the different frequencies of condenser and diaphragm microphones.
5.3 Select microphones that are best suited for various instruments or situations.
5.4 Describe direct sound and ambient sound and how to use various techniques to record each.
5.5 Design various size isolation rooms and describe their advantages and disadvantages.

SAMPLE PERFORMANCE TASK

- Record an instrument using several microphones and techniques for same instrument.
- Record an instrument or voice with same microphone both in and out of isolation room.

INTEGRATION LINKAGES

Mathematics, Technical Math, Physics, Science, Technology Literacy, English IV: Communications for Life, Problem-Solving, SkillsUSA, National Science Foundation, Computer Skills, Internet Navigation Skills, Presentation Skills, Critical Thinking and Problem Solving, Technical Writing Skills, Secretary's Commission on Achieving Necessary Skills (SCANS), Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environmental Protection Agency (EPA), www.howstuffworks.com

AUDIO TECHNOLOGY II

STANDARD 6.0

Student will demonstrate use and advantages of special effects equipment.

LEARNING EXPECTATIONS

The student will:
6.1 Demonstrate working knowledge of reverb and delay units.
6.2 Demonstrate usage of dynamic processors such as compressors, gates, and expanders.
6.3 Demonstrate understanding of special equalization of equipment, both graphic and parametric.
6.4 Identify doubling techniques in both outboard gear and in-computer editing.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student must:
6.1 Make a list of reverb and delay units and describe their differencies.
6.2 Incorporate dynamic processors such as compressors, gates, and expanders into recording process.
6.3 Define graphic and parametric equalization and various types of equalization equipment.
6.4 Create doubling effect by usingoutboard gear and in-computer editing.

SAMPLE PERFORMANCE TASK

- Listen and make written evaluations of effects heard in a recording.
- Create various sounds using special EQ equipment and plug-ins.
- Describe the effects of doubling.

INTEGRATION LINKAGES

Mathematics, Technical Math, Physics, Science, Technology Literacy, English IV: Communications for Life, Problem-Solving, SkillsUSA, National Science Foundation, Computer Skills, Internet Navigation Skills, Presentation Skills, Critical Thinking and Problem Solving, Technical Writing Skills, Secretary's Commission on Achieving Necessary Skills (SCANS), Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environmental Protection Agency (EPA), www.howstuffworks.com

Note: The following standards to be taught for second credit.

AUDIO TECHNOLOGY II

STANDARD 7.0

Students will learn the proper use of basic tools and test equipment.

LEARNING EXPECTATIONS

The student will:

7.1 Identify various tools and test equipment and demonstrate their use.
7.2 Demonstrate ability to establish signal path using basic electronic multi-meter and test tone equipment.
7.3 Demonstrate basic troubleshooting skills.
7.4 Demonstrate ability to use soldering equipment.
7.5 Identify various types of solder.
7.6 Demonstrate ability to identify and repair broken wires and connectors.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student must:

7.1 Operate tools and test equipment to repair and diagnose various wiring and equipment malfunctions.
7.2 Monitor a signal path using basic electronic multi-meter and test tone equipment.
7.3 Troubleshoot signal paths using computer and equipment skills.
7.4 Use a variety of soldering irons (including cordless) to solder various connectors and equipment circuit boards.
7.5 List and describe various types of solder.
7.6 Identify and repair broken wires, connectors, and circuit boards.

SAMPLE PERFORMANCE TASK

- Troubleshoot problem with an operational recording setup.
- Replace and or repair problem item with appropriate tools.
- Solder a variety of wires and connectors.

INTEGRATION LINKAGES

Mathematics, Technical Math, Physics, Science, Technology Literacy, English IV: Communications for Life, Problem-Solving, SkillsUSA, National Science Foundation, Computer Skills, Internet Navigation Skills, Presentation Skills, Critical Thinking and Problem Solving, Technical Writing Skills, Secretary's Commission on Achieving Necessary Skills (SCANS), Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environmental Protection Agency (EPA), www.howstuffworks.com

AUDIO TECHNOLOGY II

STANDARD 8.0

Students will demonstrate ability to mix-down and master audio recordings.

LEARNING EXPECTATIONS

The student will:
8.1 Demonstrate ability to mix-down multiple track and multiple bus recordings.
8.2 Demonstrate ability to perform 2 bus mix-down.
8.3 Demonstrate ability to perform general mastering techniques to include level adjustment, equalization, noise reduction, and song sequencing.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student must:
8.1 Perform a mix-down of multiple track and multiple bus recordings.
8.2 Perform 2 bus mix-down of a single recording.
8.3 Develop general mastering techniques using a mastering program to include level adjustment, equalization, noise reduction, and song sequencing.

SAMPLE PERFORMANCE TASK

- Mix-down multi-track recording.
- Produce final mastered audio recording.
- Write a critique on final product.

INTEGRATION LINKAGES

Mathematics, Technical Math, Physics, Science, Technology Literacy, English IV: Communications for Life, Problem-Solving, SkillsUSA, National Science Foundation, Computer Skills, Internet Navigation Skills, Presentation Skills, Critical Thinking and Problem Solving, Technical Writing Skills, Secretary's Commission on Achieving Necessary Skills (SCANS), Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environmental Protection Agency (EPA), www.howstuffworks.com

AUDIO TECHNOLOGY II

STANDARD 9.0

Students will complete a final production portfolio.

LEARNING EXPECTATIONS

The student will:
9.1 Establish production goals and objectives for a recording session.
9.2 Evaluate budget, facilities and other resources.
9.3 Create a budget for a professional recording session.
9.4 Execute a professional recording session.
9.5 Edit and mix for final product.
9.6 Evaluate and critique portfolio for meeting of goals and objectives.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student must:
9.1 Create a pre-production chart listing goals and objectives for a recording session.
9.2 Write an evaluation of budget, facilities and other resources.
9.3 Create a budget for a professional master recording session and a professional demo session.
9.4 Set up and engineer a professional recording session.
9.5 Edit and mix professional recording to a final mastered product.
9.6 List completed goals and objectives of portfolio.

SAMPLE PERFORMANCE TASK

- Produce a recording session from initial planning to final product.
- Create budgets for demo and master sessions.
- Student will provide critique on final product.

INTEGRATION LINKAGES

Mathematics, Technical Math, Physics, Science, Technology Literacy, English IV: Communications for Life, Problem-Solving, SkillsUSA, National Science Foundation, Computer Skills, Internet Navigation Skills, Presentation Skills, Critical Thinking and Problem Solving, Technical Writing Skills, Secretary's Commission on Achieving Necessary Skills (SCANS), Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environmental Protection Agency (EPA), www.howstuffworks.com

AUDIO TECHNOLOGY II

STANDARD 10.0

Students will evaluate recorded and live audio for content, style, and quality.

LEARNING EXPECTATIONS

The student will:
10.1 Demonstrate ability to identify tonal and sequential anomalies.
10.2 Identify changes in tempo of music.
10.3 Identify changes in mood due to change in volume or style of recorded audio.
10.4 Listen and identify overloading or clipping in playback of recorded material.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student must:
10.1 Identify tonal and sequential anomalies in a variety of music tracks.
10.2 Listen for and list changes in tempo of various music tracks.
10.3 Listen for and list changes in mood due to change in volume or style of recorded audio.
10.4 Correct a music track with overloading or clipping in playback of recorded material.

SAMPLE PERFORMANCE TASK

- Listen to samples of music reflecting variation in style, tempo, expression, tone, style, and mood.
- Write a critique of various music samples reflecting style, tempo, expression, tone, style, and mood.
- Remix an audio file to eliminate clipping and overloading.

INTEGRATION LINKAGES

Mathematics, Technical Math, Physics, Science, Technology Literacy, English IV: Communications for Life, Problem-Solving, SkillsUSA, National Science Foundation, Computer Skills, Internet Navigation Skills, Presentation Skills, Critical Thinking and Problem Solving, Technical Writing Skills, Secretary's Commission on Achieving Necessary Skills (SCANS), Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environmental Protection Agency (EPA), www.howstuffworks.com

SAMPLING OF AVAILABLE RESOURCES

www.howstuffworks.com

Recording in the Digital World: Complete Guide to Studio Gear and Software
by Thomas E Rudolph, Vincent A Jr Leonard

Digital Home Recording: Tips, Techniques, and Tools for Home Studio Production
edited by John Chappell

Practical Recording Techniques by Bruce Bartlett, Jenny Bartlett

Arranging in the Digital World: Techniques for Arranging Popular Music Using Today's Electronic...by Corey Allen

Promises to Keep: Technology, Law, and the Future of Entertainment by William W Fisher

Home Recording Power by Ben Milstead

On-Location Recording Techniques by Bruce Bartlett, Jenny Bartlett

This Business of Music: The Definitive Guide to the Music Industry
by M William Krasilovsky, Sidney Schemel

The Art of Digital Audio by John Watkinson

The Audiopro Home Recording Course by Bill Gibson